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MINING OF ROCKS WITH CONTINUOUS MINING MACHINES

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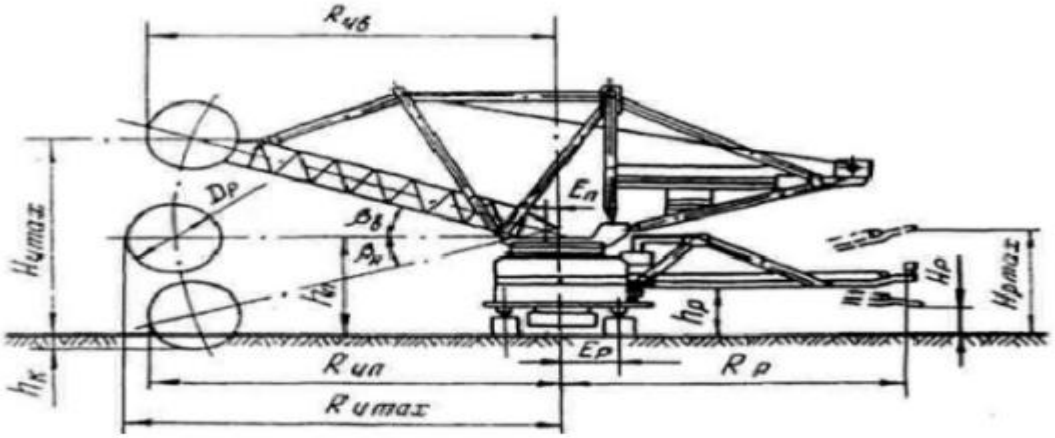
Annotation: This article talks about the mechanical properties of rocks, selection of excavator working bodies depending on these characteristics, loading by continuously working excavators, working mode of rotor excavators, working bodies of chain excavators, walking bodies of excavators and working parameters.

Keywords: Rock, abrasion, strength, hardness, excavator, continuous operation mode, rotor excavator, chain excavator, loader, stepping excavator, crawler, loading radius, unloading radius.

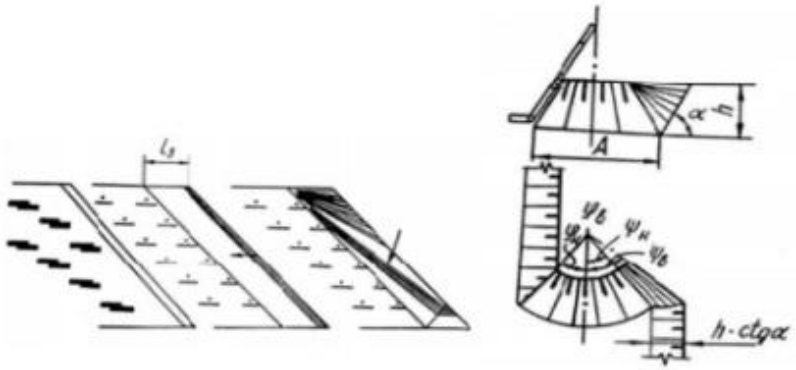
Is characterized by certain technological features in the processes of mining and processing of rocks. The most important of these characteristics is the size of their extraction and the usefulness of their use in the national economy. And determines the efficiency of mining. In the process of mining, rocks are exposed to various types of resistance, mainly impact, displacement, compaction, migration and similar resistances. as a result of encountering these resistances, the state of the rock changes. For example: rocks in a solid dense state can change to a broken state due to these forces. the rocks separated from the massif are loaded by excavators. Excavators are divided into continuous and continuous ones. The use of continuous excavators in the mining industry increases productivity. In practice, in most cases, rotor and chain excavators are used.

Rotor excavators are self-propelled, non-stop working machines, which, with the help of buckets mounted on the rotor wheel, excavate rocks and transport them to a certain distance and load them onto vehicles. Mode of operation - the rotor wheel scrapes the rock with its claws in the horizontal and vertical planes, and the resulting (separated) debris rolls onto the conveyor located at the bottom of the rotor wheel and moves from it to the reloading console. rotor excavators are machines with high productivity. They are designed for soft and dense rocks.

Parameters of rotor excavators and mining technology - mainly depends on the technical conditions of the mine in the quarry, the types of transport in the complex and their structural parameters. The height of the steps below or above the location of the excavator is determined based on the constructive capabilities of the excavators. This height is limited by the maximum permissible angle of inclination of the arrow: when dipping up - 27º, when dipping down (from below) - 18º. The maximum height of up-dipping is up to 53.5 m for modern excavators, and 25 m for bottom-dipping. Tipping with rotor excavators is included in cantilever tipping. the rotor excavator is used directly with the conveyor transport. The rock extracted by the rotor excavator is continuously transported by conveyor transport. This excavator is used in the extraction of minerals with low strength. It is desirable to use in coal mines.



Another type of continuous rock mining machine is a multi-bucket chain excavator. The working principle of this type of machines is that when buckets move on the step, each bucket cuts pieces of stone of a certain thickness and fills the bucket. When the upper drum tilts, the rock in the bucket is emptied into the hopper, and the wagon from the ground comes down to the conveyor. Multi-bucket excavators are produced in constructions that dig from below, from above or from below and from above. Bottom-dipping excavators are used in mine opening and mineral extraction. excavators dipping from above are used in excavation work together with railway transport.



a b v g

11.6-rasm. Kon massasini ko'p cho'michli zanjirli ekskavatorlar bilan qazib olish sxemasi.
a – bir qatorli vertikal qatlam bilan; b – ko'p qatorli qatlamlar bilan; v – gorizontal qatlamlar bilan; nimi strujkami;
l_v – yo'naltiruvchi ramani surilish kattaligi

The technology of mining with multi-bucket chain excavators is related to the mining technical conditions in the quarry and the type of transport used. Rock can be mined from the slope of the step or from the back. Crawler excavators can excavate rocks both on the slope of the step and entering from behind. The height of the excavated step is determined by the design of the excavator, and the depth and height of immersion are indicated in its technical characteristics. For modern excavators, these numbers reach from -12 m to 33 m. The mode of operation of excavators is fully automated and ensures their high productivity. Multi-bucket chain excavators are mainly used in soft rocks, coal, phosphates, and bauxite mining due to the low cutting power of the bucket teeth.

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